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METHOD AND SYSTEM FOR PROVIDING TRANSMISSION OF SELECTED MEDIA PROGRAMS TO A WIRELESS SUBSCRIBER

Cross-Reference to Related Application

This application is related to co-pending application entitled "Method and System for Simultaneously Sharing Wireless Communications Among Multiple Wireless Handsets," having the same filing data as the present invention.

Technical Field

This invention relates to methods and systems for providing multi-media transmission of selected media programs to a wireless subscriber.

Background Art

Today, subscribers are restricted to two-way conversations on their wireless handsets or two-way data/paging services. There is no provision for one-way transmissions to wireless handsets of available media programs. For example, subscribers who are traveling between two points often miss an important segment of their favorite television program. Whether they are leaving their home in the morning, on their way to work, or driving between appointments during the day, these individuals may desire to at least hear the audio portion of their favorite television program, such as a sports broadcast, a talk show, or a soap opera.

Thus, there exists a need to deliver desired media programs to wireless subscribers via their wireless handsets.

Summary Of The Invention

It is a general object of the present invention to provide a multi-media transmission of a selected media program to a wireless subscriber via their wireless handsets.

In carrying out the above object and other objects, features, and advantages of the present invention, a method is provided for providing transmission of a selected media program to a wireless handset. The method includes receiving a transmission from at least one media program provider, receiving a request from a first wireless handset selecting one of the media programs, and transmitting the selected media program to the first wireless handset.

In further carrying out the above object and other objects, features, and advantages of the present invention, a system is also provided for carrying out the steps of the above described method. The system includes a wireless network for receiving a transmission from at least one media program provider. The system also includes a first wireless handset for transmitting a request selecting one of the media programs. The wireless network is further operative to transmit the selected media program to the first wireless handset.

The above object and other objects, features and advantages of the present invention are readily apparent from the following detailed description of the best mode for carrying out the invention when taken in connection with the accompanying drawings.

Brief Description Of The Drawings

FIGURE 1 is a schematic diagram of a wireless network system architecture incorporating the teachings of the present invention;

FIGURE 2 is a schematic diagram of the wireless network system architecture shown in Figure 1 operating according to an alternative embodiment of the present invention; and

FIGURE 3 is a flow diagram illustrating the general sequence of steps associated with the method of the present invention.

Best Modes For Carrying Out The Invention

A schematic diagram of the system architecture of a wireless network 20 incorporating the teachings of the present invention is shown in Figures 1 and 2. The wireless network 20 typically includes a Mobile Switching Center (MSC) 22 for processing calls to and from the wireless users of the wireless network 20. MSC 22 is known to those skilled in the art as a digital telephone exchange that controls the switching between a wireline network and mobile cell sites for all wireline-to-mobile, mobile-to-wireline, and mobile-to-mobile calls. In operation, when MSC 22 receives a call from the wireline network that is directed to a wireless handset 24, MSC 22 deciphers the telephone number dialed by the originating caller and alerts Base Station Controllers (BSCs) 26 (described below) at one or more cell sites to page the corresponding wireless handset 24. Similarly, when wireless handset 24 places a call, MSC 22 accepts the dialing data from BSC 26 and uses the dialed number for routing the communication. MSC 22 also processes mobile registration status data received from BSC 26, switches calls to other cells, processes diagnostic information, and compiles mobile billing information.

Typical wireless networks include several coverage areas each including multiple adjoining cells. The BSC 26, which operates under the direction of MSC 22, serves each coverage area via a plurality of Base Stations (BSs) 28 disposed throughout each of the adjoining

cells. The BSC 26 manages each of the radio channels assigned to its coverage area, supervises calls, turns the radio transceivers on and off, injects data onto control and user channels, and performs diagnostic tests on the cell site equipment.

To register a subscriber in the wireless network 20, MSC 22 ascertains whether a subscriber is present in the wireless network when the subscriber places a call via the wireless handset 24, receives a call via the wireless handset 24, or by automatic registration. Specifically, each time wireless handset 24 is powered on or a call is originated from wireless handset 24, certain information is transmitted to MSC 22, including a Mobile Identification Number (MIN), an Electronic Serial Number (ESN), and a System Identification (SID) of the wireless handset 24.

In order to respond to subscriber call requests, the MSC 22 compares the information transmitted by the wireless handset 24 with subscriber data contained in a database, referred to as a Wireless Subscriber Location Register 30. The WSLR 30 is a master database for storing data related to each mobile subscriber, such as the subscriber profile and mobility information together with their relevant permanent (static) data, such as access capabilities and subscriber services. WSLR 30 also contains location and service data for each visiting subscriber entering its coverage area in order to route incoming and outgoing calls appropriately. The WSLR 30 performs substantially the same functionality as the well known Home Location Register and Wireless Service Control Point, yet serves one or more MSCs 22 rather than only one MSC 22, as traditionally done in the prior art.

MSC 22 and WSLR 30 communicate with each other utilizing a signaling protocol, such as IS-41 Mobile Application Part (MAP) or GSM MAP. In some implementations, MSC 22 and WSLR 30 may be integrated into one component. The MSC 22 of the wireless network 20 is

further connected to various media program providers 32, such as, but not limited to, cable, television, satellite, and radio. A media program provider may also include or be coupled to a source handset 32f for sending transmissions to other handsets either directly if they are located within direct communication proximity to the source handset 32f, or indirectly through the wireless network. The media program providers 32 can provide any kind of media including, but not limited to, audio, video, and data. The communication can also be a pre-established media program, either pre-recorded or live, such as a television or radio broadcast, as shown at block 32 in Figure 1. For example, video communications may include sports programming delivered via a traditional broadcast or television provider or via the Internet. Similarly, data communications may include media such as an Internet web page, stock quotes or sports scores.

Turning now to Figure 3, there is shown a flow diagram illustrating the general sequence of steps associated with the method of the present invention. The method begins with the wireless network receiving the transmissions from a plurality of media program providers, as shown at block 50. There may be some instances in which the wireless handset 24 can only receive a portion of the media program, such as the audio portion of an audio/video television transmission. In this case, the MSC 22 would only transmit the audio portion for transmission to the wireless handset 24.

Next, the MSC 22 receives a signal from wireless handset 24 selecting one of the media programs, as shown at block 52. In response to this request, MSC 22 then transmits the selected media program to the wireless handset 24, as shown at block 54.

It is possible that a second wireless handset 24 may request the same media program as the first wireless handset 24, as shown at block 56. Here, a determination is then made as to

whether or not the second requesting wireless handset 24 is located in the same wireless cell site, as shown at conditional block 58. If not, MSC 22 then transmits the selected media program to the second wireless handset 24 via any available wireless channel in that cell site, as shown at block 60, and in Figure 2.

If, however, the second requesting wireless handset 24 is located in the same cell site as the first wireless handset 24, MSC 22 may transmit the audio portion in one of two ways. In the first embodiment, MSC 22 transmits the selected media program to the second handset 24 via the same wireless channel as the first handset, as shown at block 62, and in Figure 1. Here, the second wireless handset 24 is instructed to tune to the same wireless channel that the first wireless handset 24 is tuned to. This may be the same time or frequency channel depending on whether the communication scheme is a TDMA (time division multiple access) scheme, a FDMA (frequency division multiple access) scheme, a CDMA (code division multiple access) scheme, or an otherwise designated channel.

Alternatively, MSC 22 may transmit the selected media program to the second handset 24 via a different wireless channel than that being used for the first wireless handset 24, as shown at block 64, and in Figure 2. Here, the media program is multiplexed into separate wireless channels for each subscriber, even if two or more subscribers have requested the same media program.

Thus, the wireless network 20 provides a linkage between media program providers 32 and wireless handsets 24 in real-time. The system supports multiple subscribers requesting the same program at any point in time as well as multiple subscribers all requesting different programs simultaneously. The subscriber receives the media program as a one-way "phone call"

with no return audio path. The subscriber does, however, have a return data-command path through which they can "dial" (e.g., press 7 or 35) another program and immediately receive the selected media program, or use their handset to place a regular phone call.

Selection of this type of communication can be accomplished in one of several ways. The subscriber could enter a well-known number or letter designation for the desired program. For example, "7" or "43" for a TV-cable program, or "1650" or "630" for a radio program (FM/AM). Alternatively, if a unique mapping for programs in a particular area can be achieved, then the subscriber could enter "KBCO" or "KUSA" to designate the station's call letters. This approach assumes the user knows the numbers for desired programs or has reference to a printed Program Listing Guide or some equivalent.

Still further, the handset 24 could present the subscriber with a list of available programs on the handset display or with an auditory list. The subscriber would then simply select the desired program and the MSC 22 would execute the needed functions to request that program. The handset 24 would provide the needed "navigation" and "search" features for the subscriber to review the entire list, find specific programs, mark/save favorite programs, etc. via arrow and scroll buttons, or other navigation mechanisms known to those skilled in the art.

The "menu" of program options could be presented to the subscriber via the handset either by having the "menu" built into the handset 24 at the time of manufacture, or by dynamically creating the "menu" for the subscriber whenever the subscriber enters a "program request" mode. In this instance, the handset 24 and the MSC 22 would exchange commands that dynamically transmit the currently available program list for the area the user is in directly to the handset 24.

In yet another embodiment, the subscriber could use the handset 24 to dial a specific "phone" number that would either access a special directory that would prompt the subscriber with program options or the wireless system could designate a different phone number for each program. Finally, the subscriber could use the handset 24 to dial a special "code" number that corresponds to a particular channel, similar to the codes used in the TV-Guide VCR-programming approach.

While the best modes for carrying out the invention have been described in detail, those familiar with the art to which this invention relates will recognize various alternative designs and embodiments for practicing the invention. This includes various architectures for constructing the wireless network. In some situations, the functionality of the MSC may be combined with a wireline network switch. In others, the intelligence for routing wireless calls is distributed to BSCs or other wireless network elements thereby eliminating the MSC as a discrete element. The teachings of this invention may be practiced with these and other embodiments as defined by the following claims.